

Notice of Allowability

Application No.

10/710,789

Examiner

Van T. Trieu

Applicant(s)

MILLER, PAUL E.

Art Unit

2636

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed on 03 August 2004.
2. ☒ The allowed claim(s) is/are 1-12.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

DETAILED ACTION

Allowable Subject Matter

1. The following is an examiner's statement of reasons for allowance: there are no prior arts teaching or suggesting of a multi-band antenna comprising:

a terminating end connectable to transmitter/receiver apparatus and a distal end opposite the terminating end;

a solid core wire extending between the terminating end and the distal end and having an overall electrical length equivalent to one-quarter wavelength of a frequency in a predetermined frequency range lower than a tire pressure monitoring frequency range;

a tire pressure monitoring frequency self-resonant circuit section disposed a predetermined distance from the terminating end such that a portion of the solid core wire between the tire pressure monitoring frequency self-resonant circuit section and the terminating end has an electrical length equivalent to one-quarter wavelength in the tire pressure monitoring frequency range; and

the tire pressure monitoring frequency self-resonant circuit section comprising, in combination, a portion of the solid core wire formed into a multiple-turn coiled section wherein the self-resonant circuit section has a signal blocking impedance at a tire pressure monitoring frequency defined by an inductive component provided by turns of the respective multiple-turn coiled section and a capacitive component provided by stray capacitance across the turns of the respective multiple-turn coiled section;

whereby when the antenna is connected to a multiplexer on a vehicle equipped with a wireless tire pressure monitor apparatus transmitting in the tire pressure monitoring frequency range, the antenna will optimally receive and conduct signals in both the tire pressure monitoring frequency range and the lower frequency range.

In another embodiment, a multiplexer circuit for selectively coupling an antenna to CB radio apparatus and to FM radio apparatus and to a tire pressure monitoring apparatus, the multiplexer circuit comprising:

- an input conductor for connection to the antenna;
- a first output conductor for connection to a CB radio apparatus;
- a second output conductor for connection to a AM/FM radio apparatus;
- a third output conductor for connection to a tire pressure monitoring apparatus;

and

- a series L-C circuit connected between the input conductor and the first output conductor and comprising a first inductor and a first capacitor connected in series and providing a blocking impedance to signals in the AM/FM range.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Baliarda et al discloses an advance multi-band antenna for motor vehicles comprising a multilevel structure antenna to operate different frequency bands of the different applications such as FM, DAB, Tetra, wireless car aperture, tire pressure control, DVB, GSM/AMPS, DCS/PCS/DECT, UMTS, Bluetooth and/or WLAN. [US 6,809,692]

Lin discloses a vehicle security system with tire monitoring device. An RF transceiver comprises a multiplexer, a radio frequency (RF) electric module, and an antenna 67. The controller is electrically connected to the multiplexer, the RF electric module, and the antenna in series. [US 6,774,779]

Breed et al discloses an apparatus and method for monitoring a tire pressure and temperature in a vehicle comprising the transmissions from different SAW devices can be time-multiplexed by varying the delay time from device to device, frequency-multiplexed by varying the natural frequencies of the SAW devices, code-multiplexed by varying the identification code of the SAW devices or space-multiplexed by using multiple antennas. Considering the time-multiplexing case, varying the length of the SAW device and thus the delay before retransmission can separate different classes of devices. All seat sensors can have one delay, which would be different from tire monitors or light switches, etc. The antenna package can be considered as an electronics module, contains a time domain multiplexed antenna array that sends and receives data from each of the five tires (including the spare tire), one at a time.

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[US 6,988,026]

Munch et al discloses a programmable trimming transponder for monitoring tire pressure comprising a first, second, third, and fourth wheel speed sensors are variable reluctance sensors, each functioning as both a transmitting antenna for its associated low frequency interrogation signal and a receiving antenna for the radio frequency tire pressure signal, the controller including multiplexing means for multiplexing the low frequency interrogation signals and the radio frequency tire pressure signal so as to process the signals separately. [US 6,914,523]

3. Any inquiry concerning this communication or earlier communications from examiner should be directed to primary examiner **Van Trieu** whose telephone number is (571) 272-2972. The examiner can normally be reached on Mon-Fri from 7:00 AM to 3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. **Jeffery Hofsass** can be reached on (571) 272-2981.



Van Trieu
Primary Examiner
Date: 2/23/06